

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF INTERNAL AFFAIRS
James F. Woodward, Secretary

BUREAU OF TOPOGRAPHIC AND GEOLOGICAL SURVEY
George H. Ashley, State Geologist

LEAD AND ZINC ORES IN LANCASTER COUNTY, PENNSYLVANIA

By

Benjamin LeRoy Miller

Zinc and lead minerals have been found in several places in Lancaster County, but the only ones deserving mention are the Pequea lead-silver mine and the Bamford zinc mine.

Pequea Mine. The Pequea mine was on Silver Mine Run, near Burnt Mills, about $1\frac{1}{2}$ miles east of Conestoga. The Lancaster Lead Company started work here in 1862 but the venture was unprofitable. Six shafts were sunk on four nearly parallel and vertical veins that were only 3 to 6 inches wide. The ore was argentiferous galena. One piece of ore weighing 8 pounds is said to have been taken from the workings. The veins were mainly in the limestone but near the contact with mica schist in which some of them were enclosed.

The following description of the ore and its occurrence by Genth* is the best one known.

"The galenite of the Pequea mine in Lancaster County is very interesting. The coarse granular variety containing only a small quantity of silver occurs in a small irregular vein in the mica slate; there is another variety, however, which either alone or associated with quartz, feldspar and mica - a regular granite - forms small lenticular, vein-like segregations in the lower Silurian limestone. It generally shows a very perfect cubical cleavage and is highly argentiferous, yielding from 250 to 300 ounces of silver per ton.

"Besides this variety with cubical cleavage there is another having a distinct octahedral cleavage into which the first sometimes graduates."

* Genth, F. A.: Mineralogy of Pennsylvania. 2nd Geological Survey of Pennsylvania, Report B, pp. 11-12, Harrisburg, 1874.



Digitized by the Internet Archive
in 2016 with funding from

This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

Bamford Mine. The Bamford zinc mine is 5 miles northwest of Lancaster and $1\frac{1}{3}$ mile north of Bamford. The writer visited the site in 1921 but as the openings are now full of water little could be learned other than the character of the ore and the country rock from the old mine dumps.

The ore body was discovered during the Mexican War by a man digging fence holes. A chemist reported that the ore contained zinc, lead, and traces of silver. The Lancaster Zinc Company was organized and by 1855 had realized \$30,000 from the sale of stock. A plant capable of manufacturing one ton of zinc oxide per day was built at a cost of \$23,000. The mine report of 1855 states that \$1,989 was realized from the sale of zinc oxide. The project failed.

The mine remained idle until 1872 when Charles Bamford bought the property and built an expensive mining and reducing plant. He is said to have spent about \$300,000 with little returns, and in 1877 closed the mine, which then had two openings on different veins.

In April 1883 the Lehigh Zinc and Iron Company leased the mines and re-opened them. Lack of ore and difficulties with the machinery made the venture unprofitable and operations ceased in the fall of 1883.

In 1900 an Ohio firm secured leases on the mines but apparently withdrew without re-opening the old workings.

Good descriptions of the Bamford mine by Persifor Frazer, Jr., and by E. G. Spilsbury are given in Pennsylvania Second Geological Survey Report CCC, Geology of Lancaster County, published in 1880. From this report the following information is abstracted.

The ore is in two bedded veins, and not in fissure or gash veins. These bed-veins are in lower Silurian limestone, near the contact with shale. They are conformable to both stratification and dip of the limestone, their general course being N 74° E and dip NW 72° . The hanging wall of both veins is brecciated, light gray, siliceous limestone and the footwall is dark blue or black, less siliceous limestone. The gangue is limestone, slightly crystalline in spots and much like the footwall.

The ore minerals from the surface to permanent water level at a depth of 18 feet are calamine and cerussite, and below water level, the sulphides of zinc and lead, galena, and sphalerite. The galena occurs mostly in bunches and little strings along or near the hanging wall, and the sphalerite impregnates the whole vein in greater or less proportions, averaging 17 to 18 per cent. Specimens of the galena may assay from \$2 to \$2,000 per ton in silver and the difference in value be indistinguishable to the eye. The average value in silver is about \$22 per ton.

The sphalerite or blende is the bright golden or rosin blende and is very pure.

The veins have been traced on the Bamford property for about $\frac{1}{2}$

mile. In 1876 both veins had been opened and worked down to the 75-foot level, and the south vein had been cut at the 110-foot level.

The north vein had been mined for 300 feet along its course and averaged 12 feet wide. It was perfectly barren, however, below the 50-foot level.

The south vein, which was the most regular and the richest, had been worked out to the 75-foot level, and on a length of over 400 feet. The average width was from 14 to 18 feet. Although in some portions the ore was very rich, still the average amount of zinc in the vein never exceeded 12 per cent, and no ore was ever pure enough to treat without previous concentration, excepting, of course, the surface deposits of calamine. The richest ore occurred about fifty feet from the surface, and from there down to 75 feet. At the 110-foot level, although the vein was well defined, there was little or no ore in it, at any of the points where it had been opened, and what little ore was in it, appeared in strings, and not disseminated, as above.

The spelter manufactured at Samford was very pure and acquired a good reputation. About 357 tons of spelter was produced between 1873 and 1876.

Future Development.

So far as known there have been no attempts to re-open the Lancaster County lead and zinc mines within recent years. When they were closed it was the prevailing opinion that it was extremely doubtful whether they could ever be worked with profit. It is true, mining and concentration methods have undergone some change since the closing of these operations, but it is still doubtful whether it would be advisable for any company to expend further time and money in working these deposits.

Bibliography.

Parker, Cleaveland, Elementary Treatise on Mineralogy and Geology, p. 514, Boston 1816.

Genth, F. A., Mineralogy of Pennsylvania, Pennsylvania Second Geological Survey, Report B, pp. 11-12, 1874.

Frazer, Persifor, Jr., Geology of Lancaster County, Pennsylvania Second Geological Survey, Report CCC, pp. 34, 55-56, 196-203, 1880.

Roddy, Justin H., Physical and Industrial Geography of Lancaster County, Pa., p. 62, 1916.

Gordon, Samuel G., Mineralogy of Pennsylvania: Academy of Natural Sciences of Philadelphia, Sp. pub. No. 1, 255 pp. 1922.

